

Y.A.R.D. 2 μ / Mini / LCD

www.yard2usb.de

Y: Yet

A: Another

R: Remote

D: Device

2: 2nd Version ☺

Disclaimer:

Y.A.R.D. is available as an assembly set and not as a final product.

**By using Y.A.R.D.2 USB
you are accepting to use
this device on**

**YOUR OWN
RISK !**

**I'm not responsible for
any damage of your
hardware / software.**

Y.A.R.D.Yet Another Remote Device 2

It is available with 3 different versions: Micro, Mini and LCD

Y.A.R.D.2 USB	Micro	Mini	LCD
USB connection	X	X	X
IR Receiver	X	X	X
IR Wakeup	X	X	X
IR Sender		X	X
RTC wakeup		X	X
Rotary encoder			X
Buttons	7	1	127
i²c Header		X	X
LCD & Light sensor			X
Windows Software	X	X	X
Linux Software	X	X	X

The device has following features (Micro / Mini / LCD):

- IR receiver for supported protocols (RC5, RC6, NEC, Samsung, Denon)
- IR wakeup support

Additional for Micro:

- Up to 7 push buttons

Additional for Mini and LCD:

- IR Sender (for some protocols)
- RTC (Real time clock) for programmable wakeup with GoldCap buffer for min 3 days in case of an power failure.
- i²c Header for extensions (FAN Controller) (Mini from Rev04)

Additional for LCD Version:

- Up to 15 push buttons (up to 127 if you do not need the Rotary encoder)
- Rotary encoder with separate push Button
- LCD for character and graphic LCD with controllers: HD44780, KS0108, T6369C
- Automatic back light adjustment via Photo resistor if LED back light is used.

Windows Software

- IR events via
 - WinLirc protocol (WinLirc not required)
 - MCE Emulation (e.g. Windows 7/8 Media center, PowerDVD)
 - JSON (for Kodi / XBMC), no plugin required
 - Keyboard emulation
- General sending of Keys to the foreground Window
- Every program with Winlirc interface can be used
- Media Portal can be controlled with my own Winlirc Plugin.
- PVR monitoring for automatic wakeup
 - DVBViewer
 - WMC Vista / WMC 7 (Beta)
 - Media Portal (only if mySQL5 is used for MediaPortal - Beta).
- Starting applications via IR
- Power on Reset handling
- FritzBox Call monitor

Linux Software

- yard2srvd is a background Daemon
- lirc daemon patch
- Work as an input device event[x] (keyboard emulation)
- yard2wakeup for automatic wakeup time for VDR
- yard2config for Y.A.R.D.2 configuration
- yard2record to create IRMap table for own lirc server implementation and for /input/event[x]
- yard2flash to update Y.A.R.D.2 firmware
- lirc test is a simple lirc test application
- [Beta] own lirc server implementation. lirc is not needed
- [Beta] An input device can be created dev/input/event[x], which simulates keystrokes
- [Beta] LCDproc driver (only char. LCDs)
 - LCD is only supported on Linux distributions with full compiler support for LCDproc !
 - e.g. Openelec is NOT supported

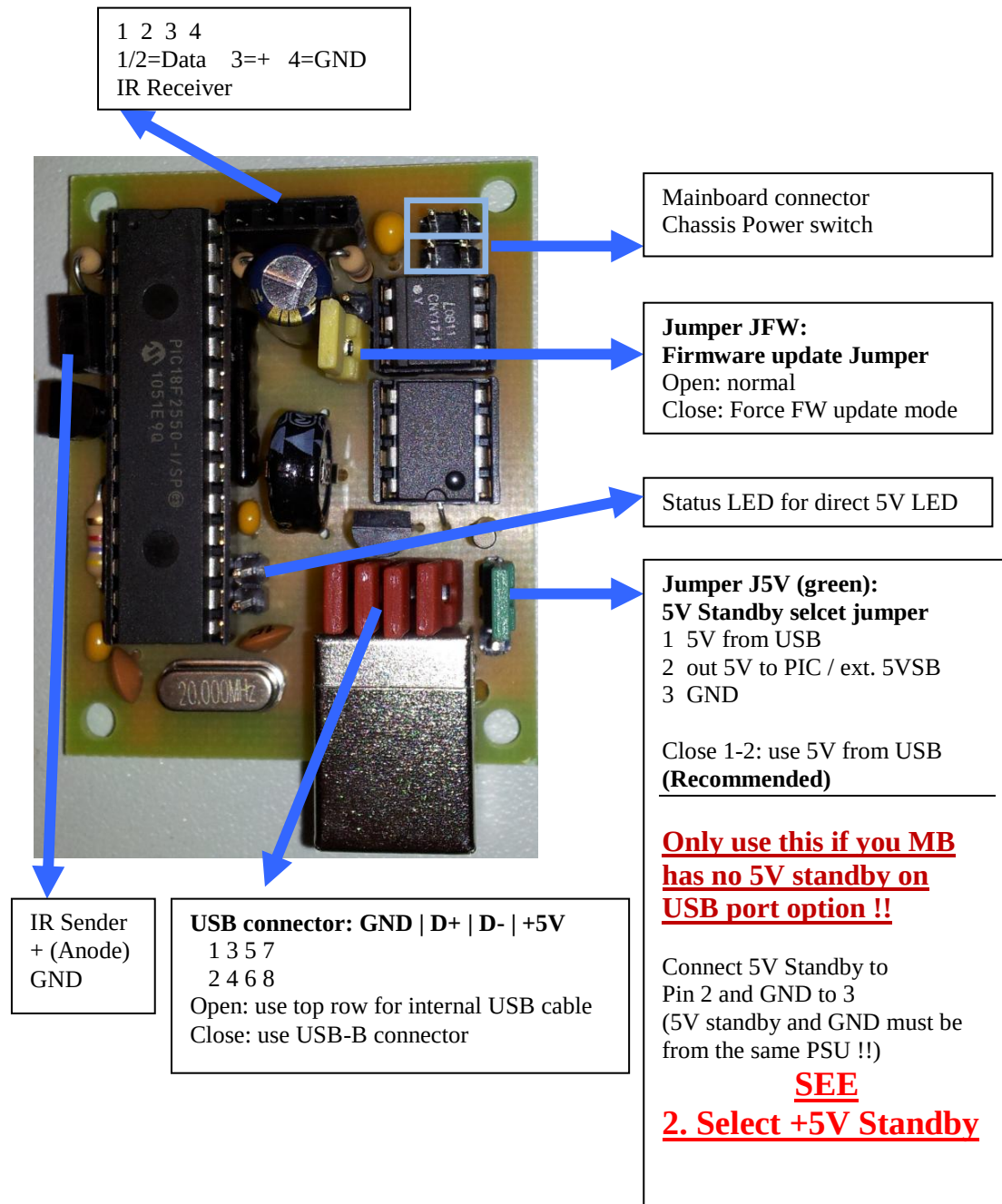
A manual installation on OpenElec (x86/RasPi/Cubex) is possible, without LCD and yard2flash support.

XBMCbuntu is also supported.

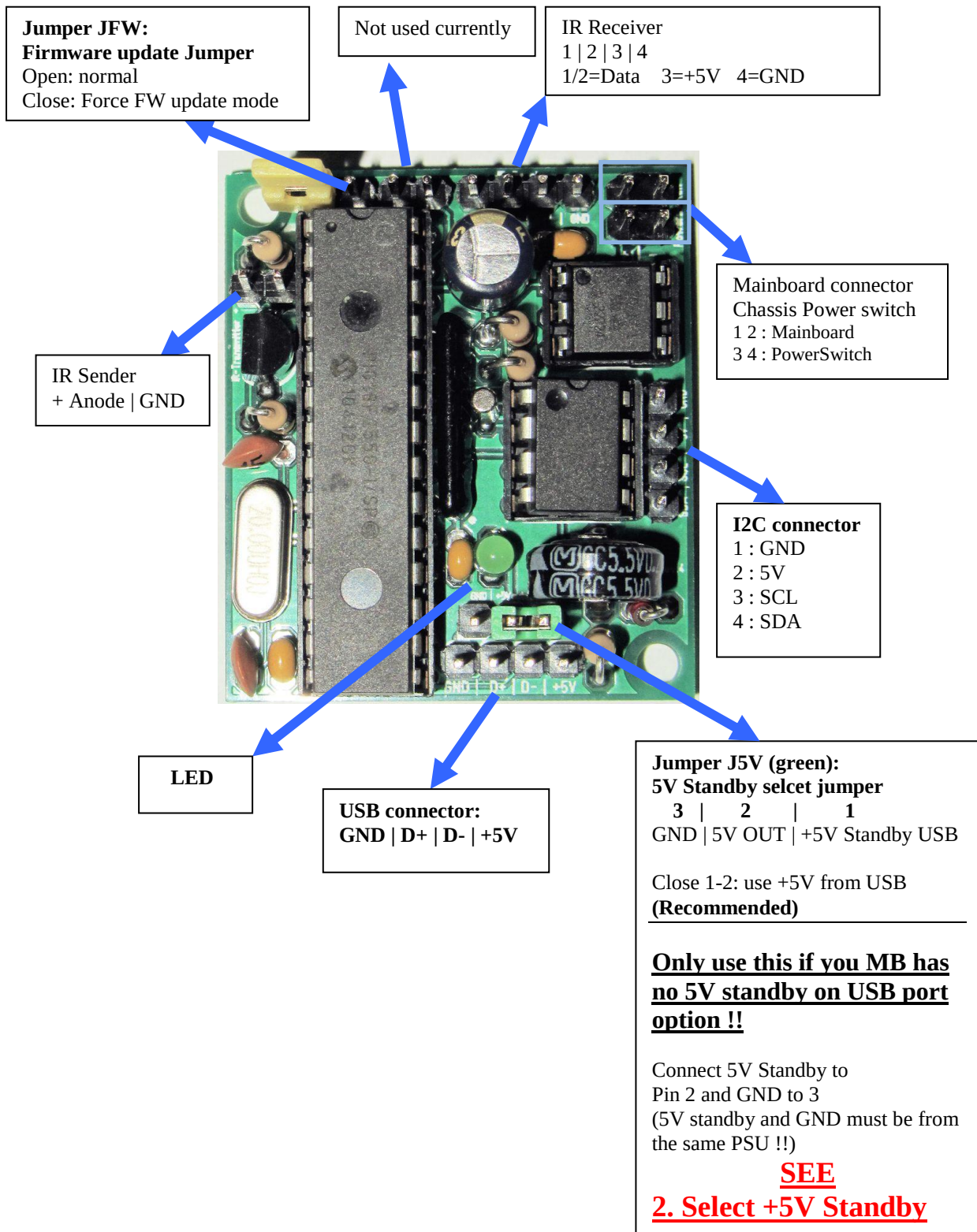
Requirements:

- Free USB port (internal preferred)
- Y.A.R.D.2 needs 5V StandBy from USB port in S5 mode (Check mainboard manual)
- Windows XP, Vista, 7, 8 32Bit / 64Bit
- Linux (LCD support currently only textmode via LCDProc)

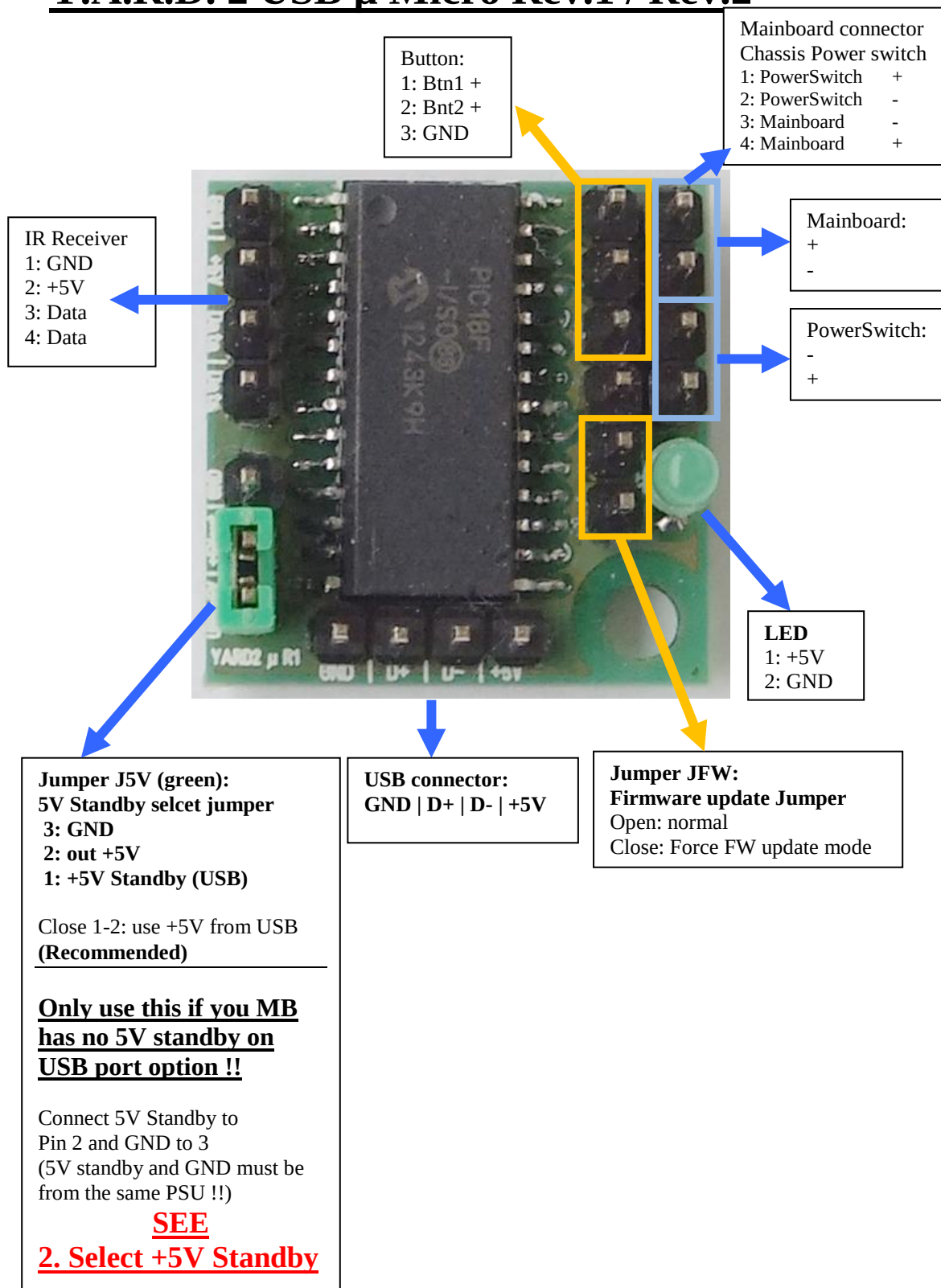
Y.A.R.D. 2 USB mini Rev.2/3



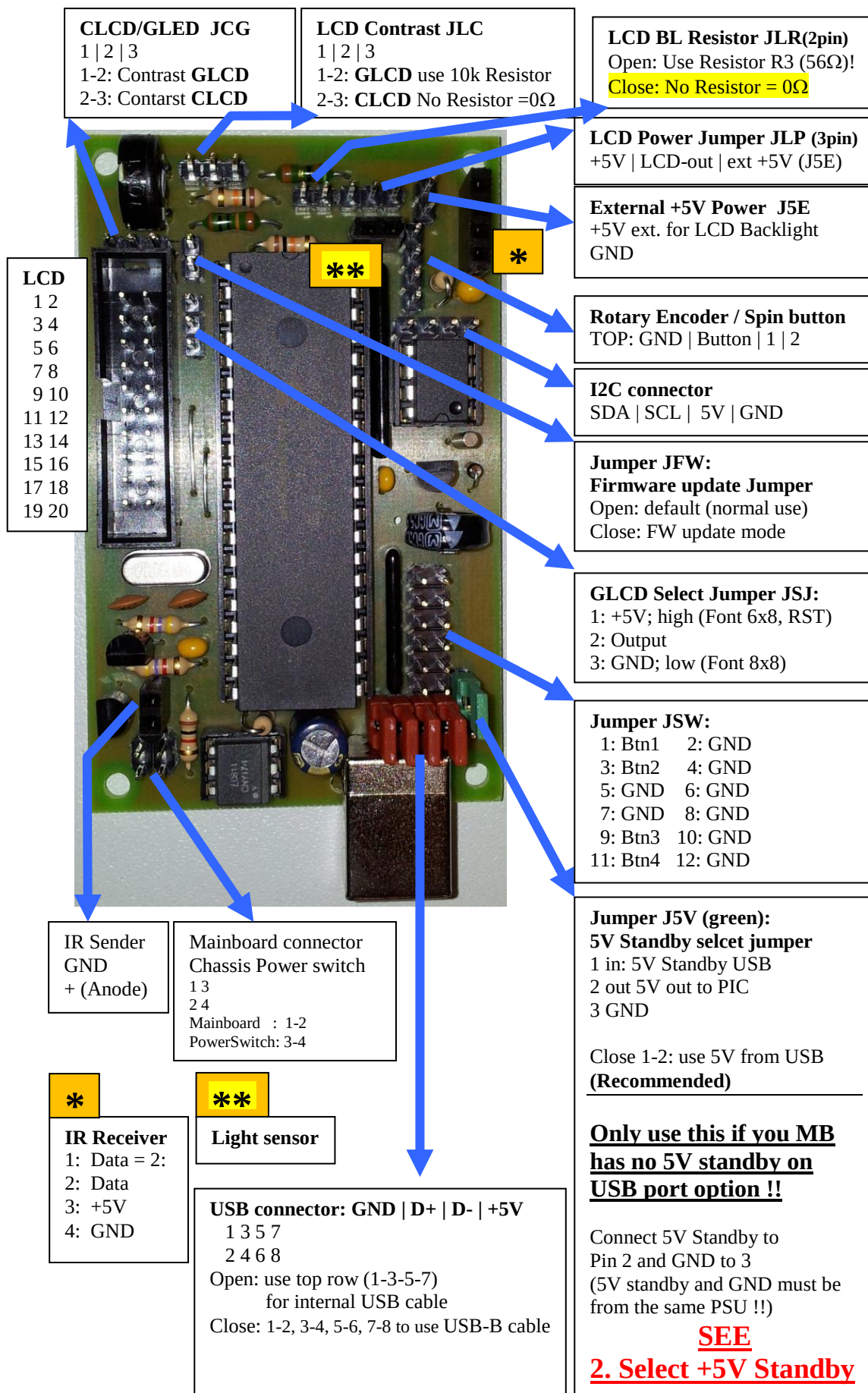
Y.A.R.D. 2 USB mini Rev.4



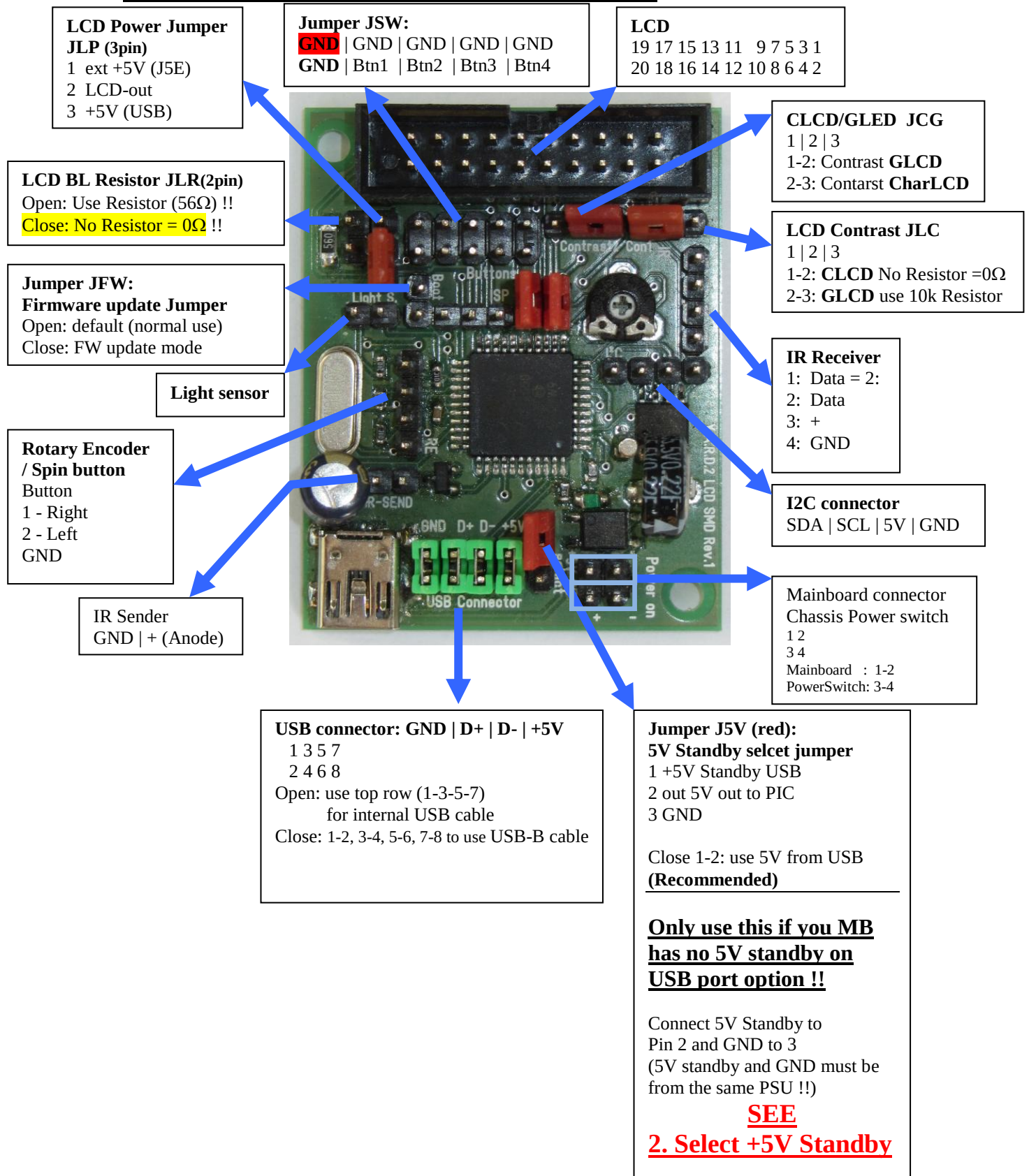
Y.A.R.D. 2 USB μ Micro Rev.1 / Rev.2



Y.A.R.D. 2 USB LCD Rev.1



Y.A.R.D. 2 USB LCD SMD Rev.1

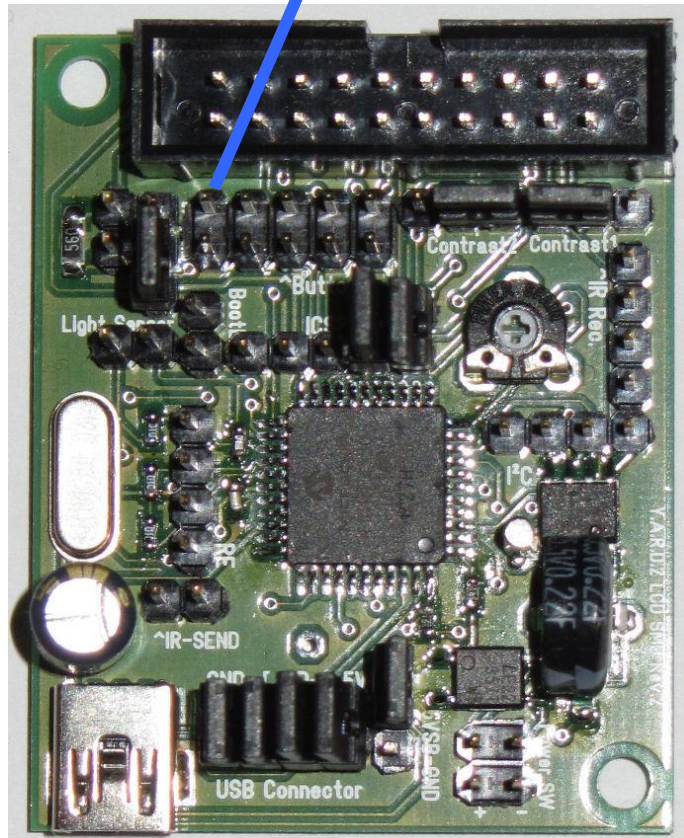


Y.A.R.D. 2 USB LCD SMD Rev.2

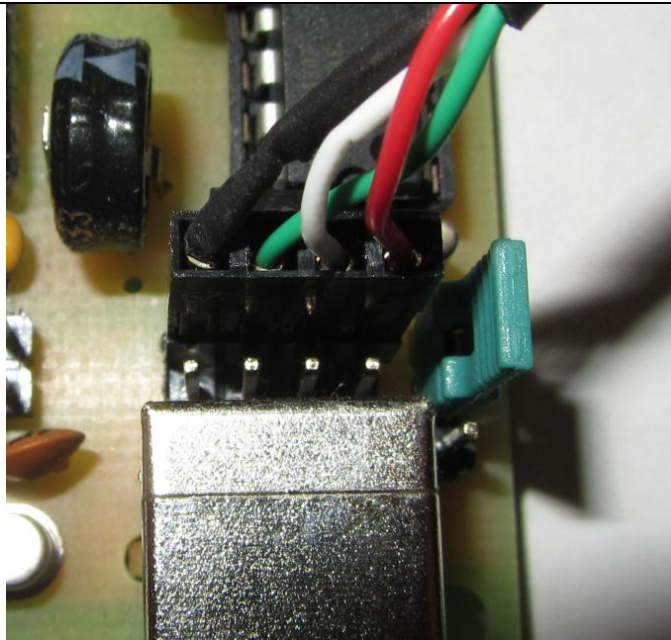
LCD SMD Rev. 2 has the same layout as Rev.1 except Jumper JSW !
There is a +5V output instead of GND !

Jumper JSW:

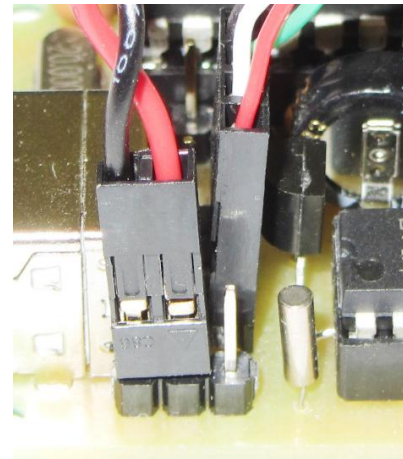
+5V	GND	GND	GND	GND
GND	Btn1	Btn2	Btn3	Btn4



Internal USB connection Mini & LCD



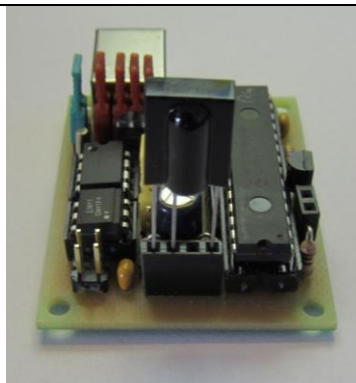
Connect USB cable to the top row
Pin layout left to right
GND | D+ | D- | +5V



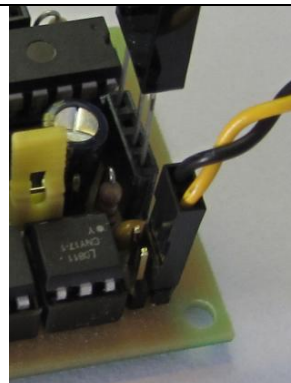
+5VSB (Standby voltage)
If USB is not providing
+5VSB connect a +5VSB
voltage to the Jumper J5V

!! WARNING !!
SEE
2. Select +5V Standby

Connection examples YARD2 Mini:



IR Receiver

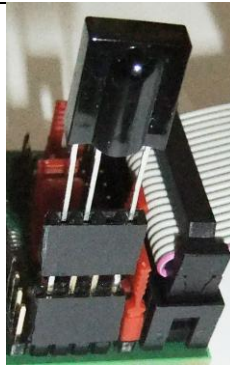


Power-MB Switch

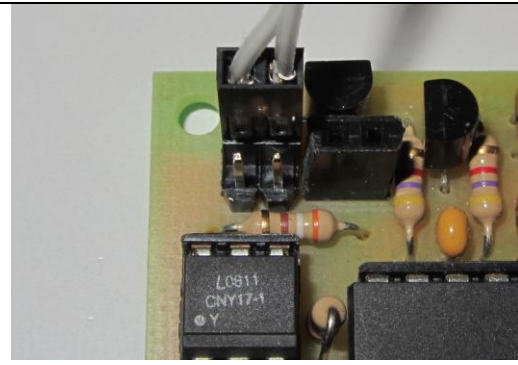
Connection examples YARD2 LCD:



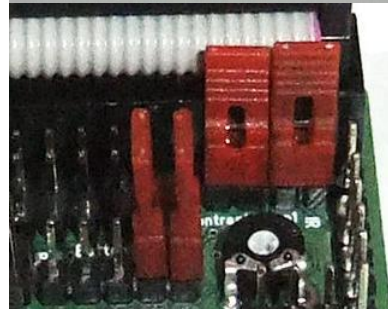
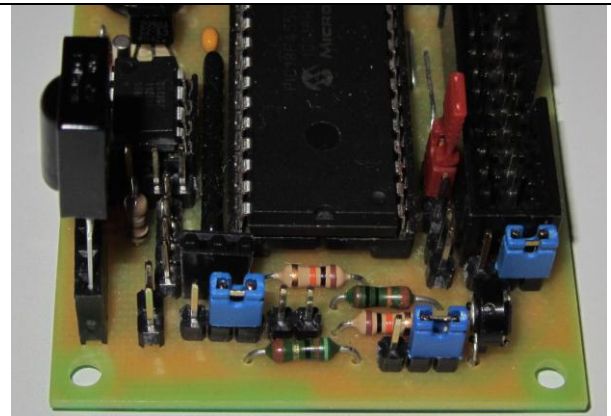
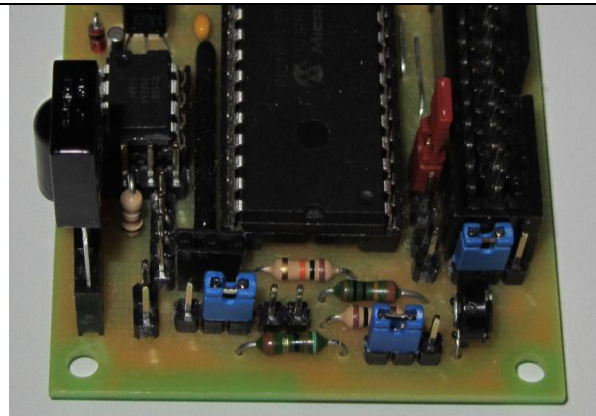
IR Receiver



LCD SMD

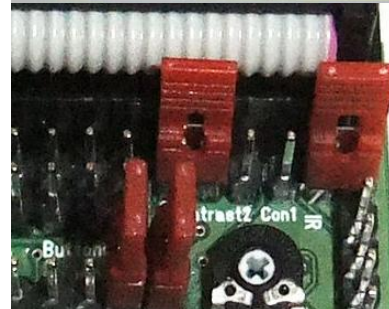


Power-MB Switch



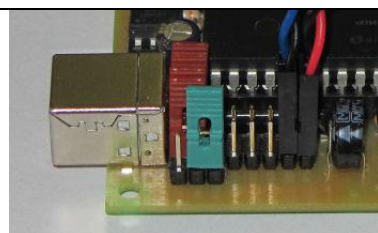
CharLCD Jumpers

LCD SMD

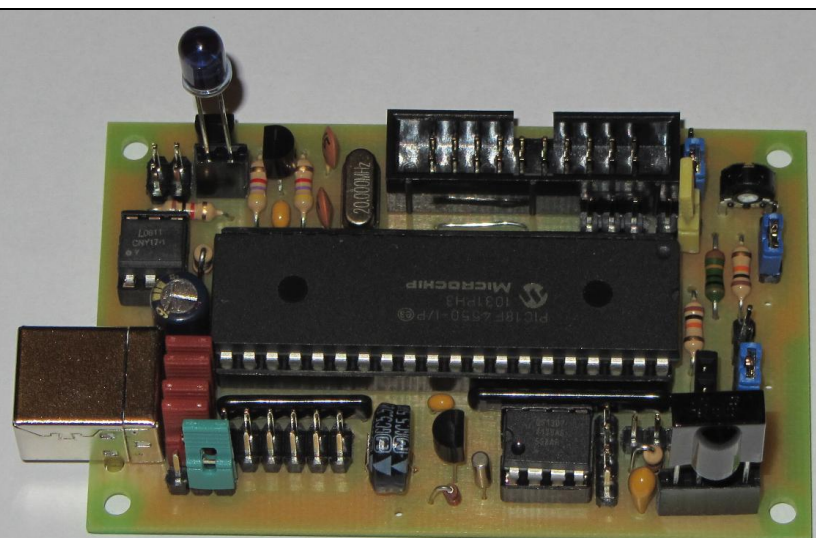


GraLCD Jumpers

LCD SMD



External Switches



Y.A.R.D. 2 USB micro mini & LCD –

Supported IR protocols:

Receive: RC5, RC6(A), NEC, Samsung, Sony, Denon

Send: RC5, RC6(A), NEC, Samsung

Y.A.R.D. 2 USB LCD - Supported LCDs:

Character LCD: HD44780, KS0073, KS0066

Graphic LCD: T6963c (max 240x128), KS0108 (only 128x64)

CLCD is recommended, because of lower μC load!

Y.A.R.D. 2 USB LCD connector:

Character LCD (HD44780/KS0073/66) (CLCD)

1: GND	2: +5V Main Power
3: LCD Contrast +5V (via Poti)	4: -
5: Backlight +5V (via Resistor?)	6: -
7: Data 0	8: Data 1
9: Data 2	10: Data 3
11: Backlight GND (PWM)	12: RS
13: Read / Write	14: Enable 1
15: Enable2	16: -
17: Data 4	18: Data 5
19: Data 6	20: Data 7

Graphic LCD (T6963c) (GLCD)

1: GND (Logic)	2: +5V Main Power (Logic)
3: LCD Contrast Adjust (input)	4: Font Select (FS) (+5V/GND via Jumper)
5: Backlight +5V (via Resistor?)	6: LCD Contrast “–Vee” provided by LCD!
7: Data 0	8: Data 1
9: Data 2	10: Data 3
11: Backlight GND	12: Data Write (WR)
13: Data Read (RD)	14: Enable (CE)
15: Command /Data input (C/D)	16: Reset
17: Data 4	18: Data 5
19: Data 6	20: Data 7

Graphic LCD (KS0108) (GLCD)

1: GND (Logic)	2: +5V Main Power (Logic)
3: LCD Contrast Adjust (input)	4: Reset (RST) (+5V via Jumper !)
5: Backlight +5V (via Resistor?)	6: LCD Contrast “–Vee” provided by LCD!
7: Data 0	8: Data 1
9: Data 2	10: Data 3
11: Backlight GND	12: Chip Select 1 (CS1)
13: Chip Select 2 (CS2)	14: Read/Write (RW)
15: Data/Instruction (RS)	16: Enable (E)
17: Data 4	18: Data 5
19: Data 6	20: Data 7

Y.A.R.D. 2 USB LCD SMD connector:

Character LCD (HD44780/KS0073/66) (CLCD)

1: GND	2: +5V Main Power
3: LCD Contrast +5V (via Poti)	4: -
5: RS	6: R/W
7: Enable 1	8: Enable 2
9: Data 0	10: Data 1
11: Data 2	12: Data 3
13: Data 4	14: Data 5
15: Data 6	16: Data 7
17: -	18: -
19: Backlight +5V (via Resistor?)	20: Backlight GND (PWM)

Graphic LCD (T6963c) (GLCD)

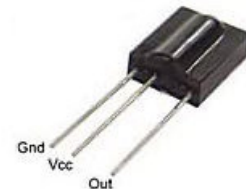
1: GND (Logic)	2: +5V Main Power (Logic)
3: LCD Contrast Adjust (input)	4: LCD Contrast “-Vee” provided by LCD!
5: Data Write (WR)	6: Data Read (RD)
7: Enable (CE)	8: Command /Data input (C/D)
9: Data 0	10: Data 1
11: Data 2	12: Data 3
13: Data 4	14: Data 5
15: Data 6	16: Data 7
17: Reset	18: Font Select (FS) (+5V/GND via Jumper)
19: Backlight +5V (via Resistor?)	20: Backlight GND (PWM)

Graphic LCD (KS0108) (GLCD)

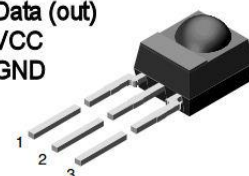
1: GND (Logic)	2: +5V Main Power (Logic)
3: LCD Contrast Adjust (input)	4: LCD Contrast “-Vee” provided by LCD!
5: Reset (RST)	6: Read/Write (RW)
7: Data/Instruction (RS)	8: Enable (E)
9: Data 0	10: Data 1
11: Data 2	12: Data 3
13: Data 4	14: Data 5
15: Data 6	16: Data 7
17: Chip Select 1 (CS1)	18: Chip Select 2 (CS2)
19: Backlight +5V (via Resistor?)	20: Backlight GND (PWM)

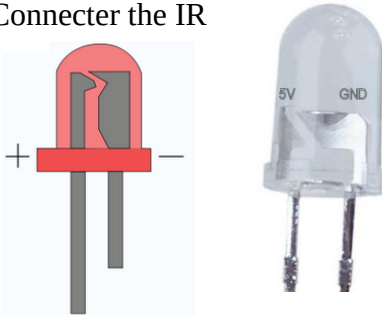
Jumper Options (positions see explanation above):

CLCD/GLCD JCG	Select your used LCD GLCD or CLCD
LCD Contrast JLC:	Select if your LCD needs a additional contrast resistor. GLCD or CLCD
LCD BL Resistor JLR	Select if your LCD needs a Backlight resistor or not. (Default 56Ω) LED Backlight normally needs a resistor if not included on LCD. Be sure you use the correct resistor for your LCD !! Otherwise you can damage your LCD !!!
LCD Power Jumper JLP (3pin)	If you use a normal LCD with LED backlight you can use the USB as PSU for the backlight. → Close: +5V LCD-out If you use a LCD with a high current (>250mA) backlight you can select the external PSU for the backlight. → Close LCD-out ext +5V (J5E)
External +5V Power J5E	Connect external PSU for LCD Backlight Power JLP
GLCD Select Jumper JSJ Only non SMD LCD-Version	T6369c: Select your Font you want to use with your GLCD Font 6x8: Close 1-2 (+5V) Font 8x8: Close 2-3 (GND - default) KS0108: +5V: Close 1-2
Jumper JFW:	See 3. Firmware update.
I ² C connector	I ² C connector for additional addons. (FAN-controller)
Rotary Encoder / Spin button	GND: Connect to GND Button: Button of the Rotary Encoder (if available) Left pin of the Rotary Encoder Right pin of the Rotary Encoder
Jumper JSW	Connect your buttons/switches to this Jumperblock You can connect 4 buttons directly (1-2), or 15 with a diode matrix (Appendix1)
Jumper J5V (green)	See chapter 2. "Select +5V Standby"
IR Receiver	Connector for IR-Receiver TSOP31238 1: GND 2: 5V (VCC) 3: Data (out) TSOP 32238 1: Data (out) 2: 5V (VCC) 3: GND



1: Data (out)
2: VCC
3: GND



USB connector: GND D+ D- +5V	See chapter 1. “Connect Y.A.R.D.2 USB LCD / Mini to your system”
Light sensor	Connector for light sensor for automatic backlight adjust
IR Sender / StatusLED	Connector the IR send diode 

Y.A.R.D. 2 Status LED:

Y.A.R.D.2 LCD SMD and Y.A.R.D.2 mini Rev.2 (or later) are equipped with a status LED or a header for a status LED (5V LED !). The behaviour can be selected in the Windows or Linux software.

Current modes:

0. LED off
1. LED on
2. LED 1 second blink (RTC time must be set)
3. LED blink if IR Wakeup code is detected
4. LED on if system is off (e.g. to check if OFF state is correctly detected)
5. LED blink during an IR-code receive (always)
6. LED blink during an IR-code receive when system in “ON”

HINT:

From 05/2014: In Bootloader mode the LED is blinking fastly (~ 4 each second)

External buttons

All YARD2 versions can connect an external button at the force firmware update jumper.

During normal operation this will generate a button event.

During YARD2 Bootup this will enter force update mode, **see 4**.

More buttons can be connected, depending on your YARD2 version:

Micro: 3 additional buttons can be connected, see description above

Mini: only the force update Jumper Button is available

LCD: Up to 15 buttons can be additional connected to the button headers. Additionally the Rotary Encoder can be used as buttons.

See Appendix 1 for an example.

Buttons must be connected from “+” to “GND”.

1. Connect Y.A.R.D.2 to your system

A: USB-B / USB-B mini connector (if available)

Close all 4 jumper (1-2, 3-4, 5-6, 7-8) of USB connector and attach a normal USB-B / mini to USB-A cable. Connect to a free USB Port of your system.

B: Internal USB header

Open all jumper, use a internal 4pin cable (upper row of YARD) to connect to a USB header on your Main board. (1=GND | 3=D+ | 5=D- | 7=+5V)

Be careful when you connect the USB cable!

Do not mix up the direction!

For internal connection you need an internal USB cable. This is not part of the Y.A.R.D.2 package. You can get such a cable easily e.g. via eBay.



Internal USB cable (4Pin → 4Pin or 5Pin → 4Pin)

2. Select +5V Standby – **WARNING read carefully**

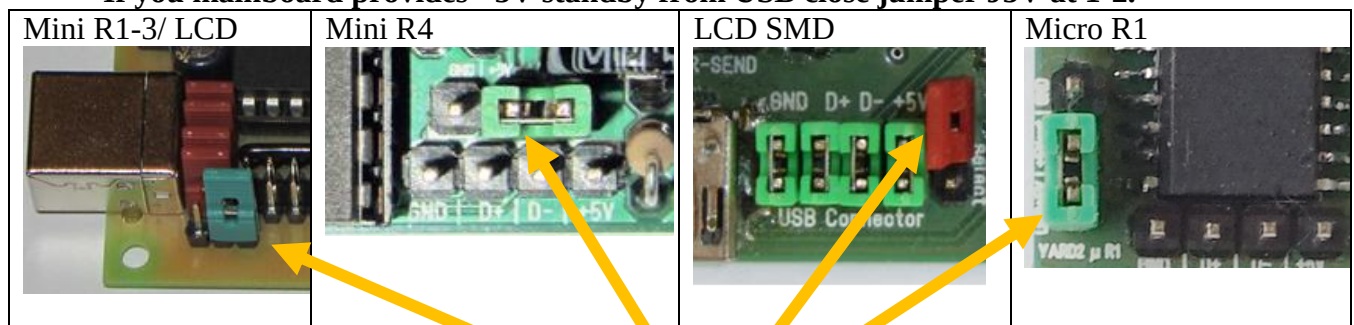
Y.A.R.D. 2 USB needs +5V standby power to work while the system is in S5 mode (Shutdown / OFF).

It is recommended to use +5V standby power from USB port.

See also Appendix 2 for details

Look at you mainboard manual for this feature. It is possible that you need to enable this feature by Bios setting or mainboard jumper.

If you mainboard provides +5V standby from USB close jumper J5V at 1-2.



**ONLY IF YOU MAINBOARD CAN NOT PROVIDE
+5V Standby from USB
!! BE VERY CAREFUL WHEN CONNECTING !!**

You can use another +5V standby from your Mainboard e.g.

1. WOL connector
2. CIR header
3. From PSU

if available.

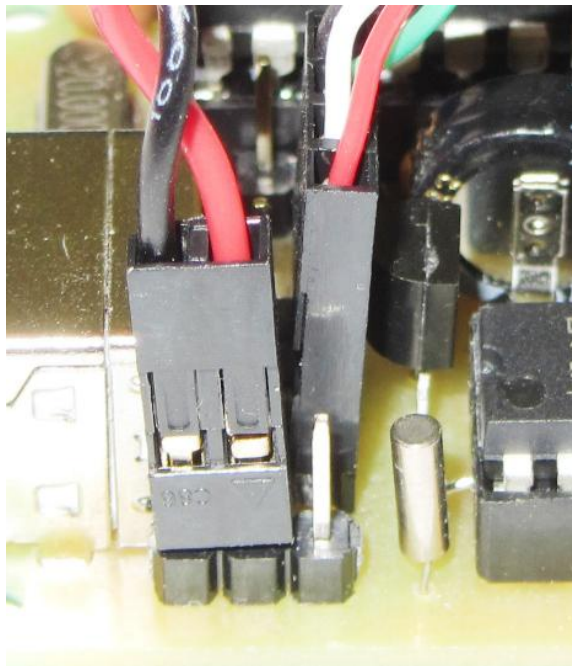
Look at your Mainboard manual for a +5V Standby provider!

See also Appendix 2 for details

Be careful while connecting this you Y.A.R.D. 2 USB!

Check Pin layout of your Y.A.R.D.2 version and connect

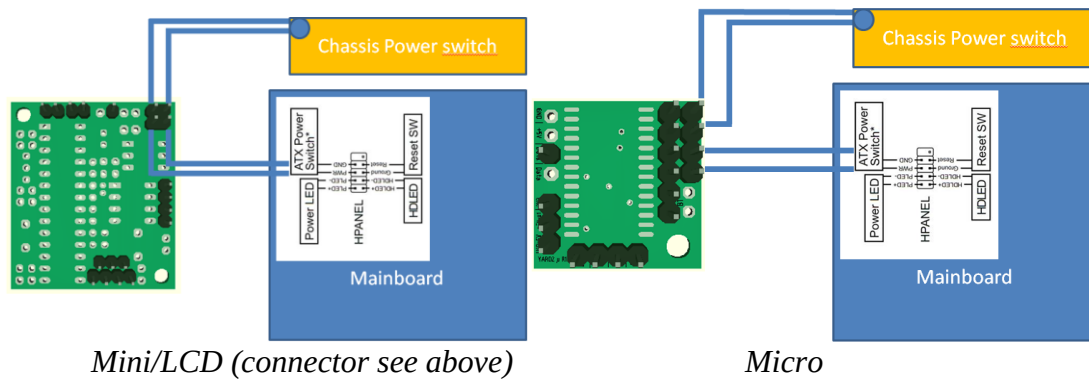
1. +5V Standby (here RED cable) to pin 2 (middle of the 3 Pins) and
2. GND to pin 3 (Black cable).



**Standby voltage must be from the same PSU connected to your
Mainboard.**

3. Connect Power switch cable

1. Connect the Power switch cable from your chassis to Y.A.R.D.2
(See mainboard connector Chassis Power switch on the Hardware description page)
2. Connect a cable from Y.A.R.D. to the main board power switch
(Where you normally connect your chassis power switch)



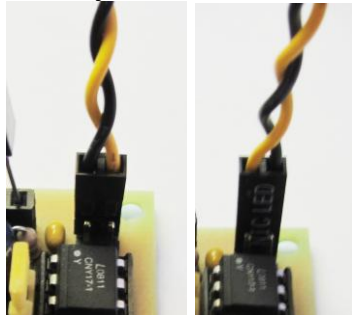
Some main board needs to attach the cable from the Y.A.R.D.2 to the mainboard power switch in the right direction.

How to check correct direction:

In Windows you have to setup the energy settings, that Windows will shutdown by pressing the chassis power switch.

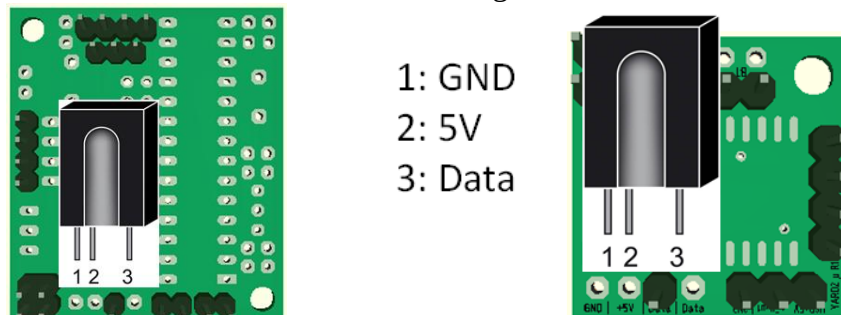
You can check now the connection by using the “Test power switch” button in the Y.A.R.D. Software Setup tab.

If the system will **not** shut down you have to turn the cable 180°. Test it again.



4. Connect IR receiver

IR receiver must be installed according IR-Receiver Pin out, see above (e.g. 31238)



Mini/LCD (connector see above)

Micro

5. Firmware update (force Firmware update mode)

Normally Firmware update is done completely by software.

See section “Windows or Linux” software for details.

In case that anything went wrong during Firmware update process or FW update procedure changes, you can force to enter “Firmware update mode” by closing jumper JFW.

Force Firmware update process:

1. Disconnect Y.A.R.D.2 USB from USB (& Power) completely
2. Close jumper JFW
3. Connect Y.A.R.D.2 to USB (& Power)
4. Wait 10 seconds and remove JFW jumper
5. Start Y.A.R.D.2 software and start Firmware update
6. After update is completed, close Y.A.R.D.2 Software and restart it.
Y.A.R.D.2 should work now normally.

6. Remote control & Logitech Harmony

You can use any multi remote control as long as you select a model with a supported protocol.

For a Logitech Harmony you can use e.g. following profiles:

- Asrock 330HT

Select: "Media Center PC" -> ASRock -> ION 330HT

- Origen AE TechnologyS16V

Select: "Media Center PC" -> Origen -> TechnologyS16V

Y.A.R.D. 2 is only a IR receiver.

You have to learn and configure each remote control button in the software!!

LCD related section:

7. LCD contrast adjust:

Adjust the LCD contrast with the 10k Poti to your specific LCD.

Without this your LCD might show nothing or is black

8. Negative voltage for LCD contrast:

Y.A.R.D. 2 does not provide negative voltage for contrast adjusts!

If you need negative voltage and it is not provided directly from the LCD, you can use an external -12V DC/DC converter (+5V -> -12V) and connect the -12V negative voltage output to **Pin 6** of LCD connector (cable) or **Pin 2** of Jumper “CLCD/GLED JCG”

Y.A.R.D. 2 USB Windows Software description

1. Driver installation for normal / update mode

A: Windows XP 32/64bit

After connecting Y.A.R.D.2 USB to the system a dialog is shown to select driver.

Select "YARD2" directory and install driver

B: Windows Vista / Windows 7 32/64bit

After connecting Y.A.R.D.2 USB to the system will not find any known driver for this device. Open "Device Manager" search for Y.A.R.D. 2 and update driver manually: Right click → update driver.

Select "YARD2" directory and install driver

C: Windows 8 32/64Bit

See additional document "Windows8_Installation.pdf" or visit www.yard2usb.de and select Videos

*For the **Firmware update** another driver is necessary.*

At the first time you update the Firmware following A or B.

In device manager it is shown as "sprut device" or "Custom USB Devices" or "YARD2_BOOTLOADER"(depends how old your YARD is ☺)

Select "Bootloader" directory and install driver.

2. Y.A.R.D. 2 Software (Windows)

Every option in the software with a "Y:" in front, is a Y.A.R.D.2 USB option and needs to be saved by pressing "Save YARD settings".

Almost all settings / buttons in the software have hints with a further description.

All settings are stored in the Registry: "HKEY_CURRENT_USER\Software\YARD2".

Configuration:

2.0 Menu

YARD2 → Test Power switch

To test the correct connection of the mainboard power switch:

If you press the button the system will probably shutdown.

If the system does not shutdown:

1. Check Windows default behaviour when the Power button is pressed
2. Turn the cable from the Y.A.R.D. to the mainboard

YARD2 → Dump / Erase EEPROM DATA

If something does not work you can erase the EEPROM and start again.

For debug you can save the EEPROM to a file

YARD2 → Expert Settings

Here you can change or enable some not common settings.

YARD2 → Export Settings

Export all Windows settings from the registry to a file.

2.1 Setup tab

If you want to start this application during Windows start. Check this box.

Select COM port and press “Open Com port”

If you selected the right one, you see the current status in the Y.A.R.D.2 field

Options:

TCP port for Winlirc: Change only if you use another port. Default: 8765

Test Winlirc

Y.A.R.D. 2 sends dummy data to all connected WinLirc devices.

Y: Status LED:

Set mode Status LED. LED modes see above.

Y: Y: Use WakeUP IR Button also as shutdown command:

If enabled the power switch button will be triggered even if system is ON.

Depending on your system power button setup this will shutdown your system.

FritzBox Call Monitor

If you use a Fritz!Box and it is configured to send the incoming calls via TCP, you can show the information which number is calling to your number.

Reset Y.A.R.D. 2

Reset / reboot the device.

Firmware update → See 2.2

2.2 Firmware Update Dialog

Dialog to update the Y.A.R.D. FW.

“Select FW” and press “Upload new FW”.

Check “Reset EEPROM DATA” to reset the configuration to default.

Use this only if you have problems during Y.A.R.D.2 startup.

After the new FW is flashed press “Close FW update”

Hint:

At first update you have to install the Y.A.R.D.2 Bootloader driver.

See: Driver installation at next page how to install driver.

Do not exit the update dialog!

After driver is installed, press “Upload Firmware” again.

In Firmware update mode, no COM-port is available.

It is done via a custom USB interface.

2.3 RTC / POR tab

Setup time and wake up time

Y: Start system after power loss:

If a power loss is detected you can decide to start the system or not.

Configure POR (Power on Reset = Power loss) handling.

Reboot / Shutdown -> Restart Stability Test (Use this only for Debug !!)

You can test Y.A.R.D.2 and you system for wakeup and system start.

2.4 VDR / Recording tab

Y.A.R.D. SW tries to get the next programmed recording and set the wake up time automatically. Currently supported:

- DVBViewer / DVBViewer Recording Service
- Windows Media Center Vista
- Windows Media Center Windows 7
- Windows Media Center Windows 8
- Media Portal (if mySQL database is used)

“Set new wake up time immediately” programmes the wake up time on every recording change. Otherwise time will be set only during shutdown.

For some Media application you have to setup some individual parameters

- ➔ DVBViewer and DVBViewer Recording Service
- ➔ XBMC IP address if default IP / port is not used

2.5 IR Key map tab

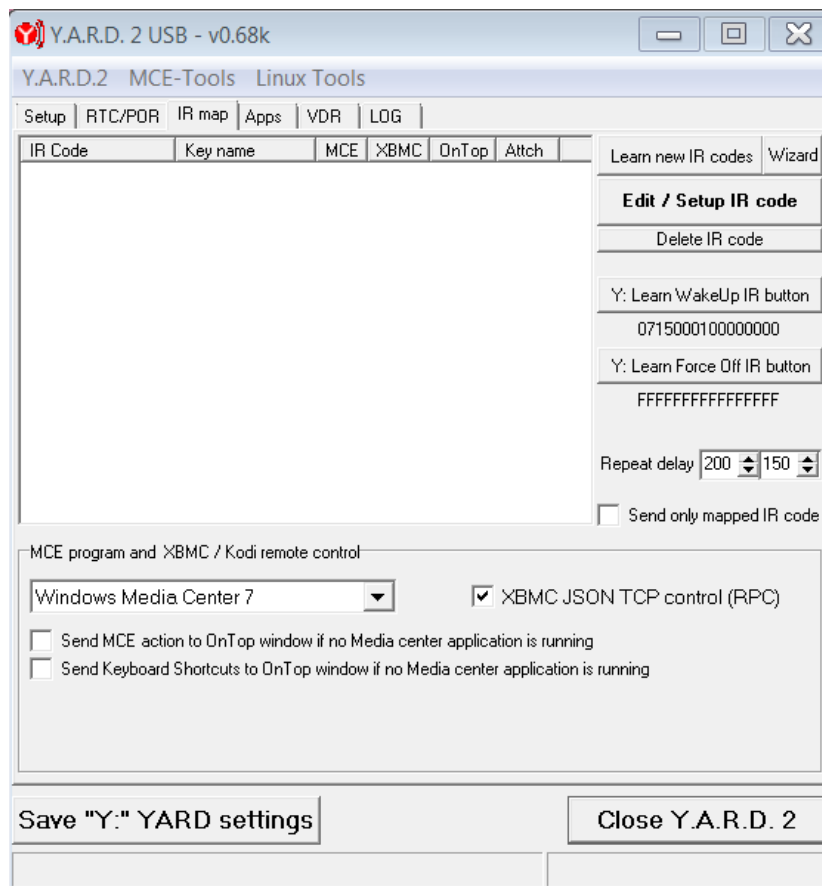
Y.A.R.D. is only a IR Receiver.

Every button on your remote control must be learned and configured !!

Please note that the controlling with IR commands is handled in 4 steps:

- 1: Mouse and Start application
- 2: XBMC via TCP if option is checked
- 3: MCE Emulation of the selected application
- 4: OnTop Window

If an IR event is working with e.g. 2: XBMC then 3 and 4 will be skipped!



Every code needs unique specific keyname. An automatic prefix can be used. For the common IR buttons / events you can use the IR Setup wizard. Additional buttons can be added afterwards.

To change the settings double-click or press “Edit / Setup IR Code”.

Setup Wizard:

1. Press “Wizard”
2. Press the button on your remote for the shown event e.g. “UP”
3. Press Skip if you do not want to use this Event.
4. Wizard close automatically after all buttons configured.



Manual button learning:

1. Press “Learn new IR code” to enable learning mode
2. Press a button on your remote control you want to use and enter a keyname or select one from the pre-defined list.
Set MCE, XBMC action and program assignment from dropdown menu.
3. Press “Learn new IR code” again to disable learning mode
4. You can edit or delete IR Code afterwards if necessary

Mouse & MCE emulation & XBMC Setup

Select IR code in upper list and select the emulated key in dropdown field or via context menu.

Mouse: Configure IR code exclusively to work as a mouse replacement

OnTop: Configure keystroke for OnTop window

MCE: Configure which IR code is used for MCE emulation.

XBMC: Configure XBMC action of selected IR code for JSON TCP.

Note: If you use MCE emulation with Windows Vista or higher, the user context (e.g. Administrator privileges) of the YARD Software and the target application must be the same!

Attach IR code to applications and send scripts

Edit the IR code by DoubleClick or use “Edit / Setup IR Code”

Select application (see Apps Tab) or Sendscript and press OK.

IR Wake up/ Start up Button

Learn a specific IR code to power on you system press

1. “Y: Learn Start IR command”. Press the button on your remote device.
2. Press and hold the button you want to use for 1 second
3. Press “**Save YARD settings**” to save this code to YARD2 EEPROM.

To Reset Wake Up code, double click to the code below the button.

Learn system Force Power off IR button

Learn a specific IR code to force power off you system press

1. “Y: Learn Force off IR button”. Press the button on your remote device.
2. Press and hold the button you want to use for 1 second
3. Press “**Save Y: YARD settings**” to save this code to YARD2 EEPROM.

To Reset Wake Up code, double click to the code below the button.

!Warning – The system will be power off immediately!

For MCE emulation you have to select a target program:

- Windows Media Center
- PowerDVD
- MediaPortal (Use Winlirc Plugin for MP instead! See YARD2 SW folder!)
- XBMC (**Use XBMC TCP control instead!**)

To test the emulation you can press “Test MCE” from Main menu to send the selected MCE code.

For MCE, you can also send the command to the top windows whatever it is. Also defined keys can be send to top window if no Media center is running

Send only known IR codes (key mapping) to clients (WinLirc only):

If selected only IR code which are in the list will be send. All other will be logged but ignored for controlling.

This is recommended after you configured all IR buttons!

Repeat delay adjustment

You can configure how much time must be between 2 similar IR events.

This can be configured seperatly for the first event and all following events.

Recommended settings: 1st: 200 – 2nd: 150

(1st should be higher than the 2nd)

MCE new target programs (For experts)

You can add a new program to the target programs list:

1. Start the new program
2. Press “List windows”
3. Select your program in the list and note the “WindowClass”
4. Open “YARD_Window_map.ini” (Y.A.R.D. software folder) in an editor and add the program to the file. This must be done manually!
5. Restart Y.A.R.D. software

2.6 Apps tab

Configure application that can be used with YARD SW.

Select program and “Toggle” option:

‘X’: Usage disabled at the moment

‘I’: Can be used to start with IR-command

‘A’: Start application with Y.A.R.D.2, start delay 1 second for each SW

Send IR Script:

Here you can configure the IR codes which will be sending when you attach a IR Code to a send script. It can contain 1..10 IR codes.

IR Send is still experimental and in work and does not work sometimes.

2.7 LCD (Only available in LCD Version)

2.7.1 LCD setup

Configure your LCD display.

Currently supported displays

CLCD: HD44780, KS0066/73,

GLCD: T6963c, KS0108 (only 128x64).

Recommended are CLCD, because of the lower data rate

Y: Display Time and WakeUp while system is off

(Req. USB standby power) Self explaining ☺

Y: Show own welcome message during start

You can enter your own welcome message during start up

Show own shutdown message

Last message before system shutdown.

Y: LCD Testmode (Time, IR, USB Status)

This is useful for debugging – currently only 4x16 / 4x20 displays are supported

If you enable, you can not write on the LCD yourself!!

If system is shutdown, the backlight is disabled. You can see the text on the LCD if you look carefully on the LCD. The text may be very dark.

Clear LCD after YARD software start

Clears the LCD directly after the Y.A.R.D. is successfully opened by the software.

LCDHype Textmode only (KS0108 Controller)

This option activate only the Textmode with the KS0108 Controller when used with LCDhype

Y: Rotary Encoder

If you use a rotary encoder, you can configure your used type.

Some encoders send more than one impulse per turn.

Look at the datasheet of you encoder how many impuls/turn is send. (1..4)

Switch direction left <-> right if necessary

2.7.2 LCD Test

On this page you can test your LCD – self explaining ☺

Be sure Testmode is disabled!!

You can also see the text and graphics that external programs, like LCDHype is sending to Y.A.R.D.2 SW

2.7.3 Lightsensor

Setup max and min value for automatic backlight adjustment with light Sensor
Get current value and press “Minimum” or “Maximum” to setup the values.

LCD Backlight

Setup max and min value for automatic backlight adjustment with light Sensor

➔ Press “Save YARD settings” after configuration

2.8 Log tab

Configure the Log option. If everything works well disable all.

“Log all events / messages / IR”: Log every message created by YARD2 SW

“Log all Remote keys”: Log only the IR commands

“Log all LCD output”: Log all LCD controls received from external LCD program, e.g. LCDHype

Hint: Disable log if you do not need it!

3 Application specific settings

3.1 MCE application e.g. Windows Media Center (Vista / Win7)

Configure MCE emulation and select e.g “Windows Media Center” as target.
Thats all ☺

3.2 XBMC / Kodi

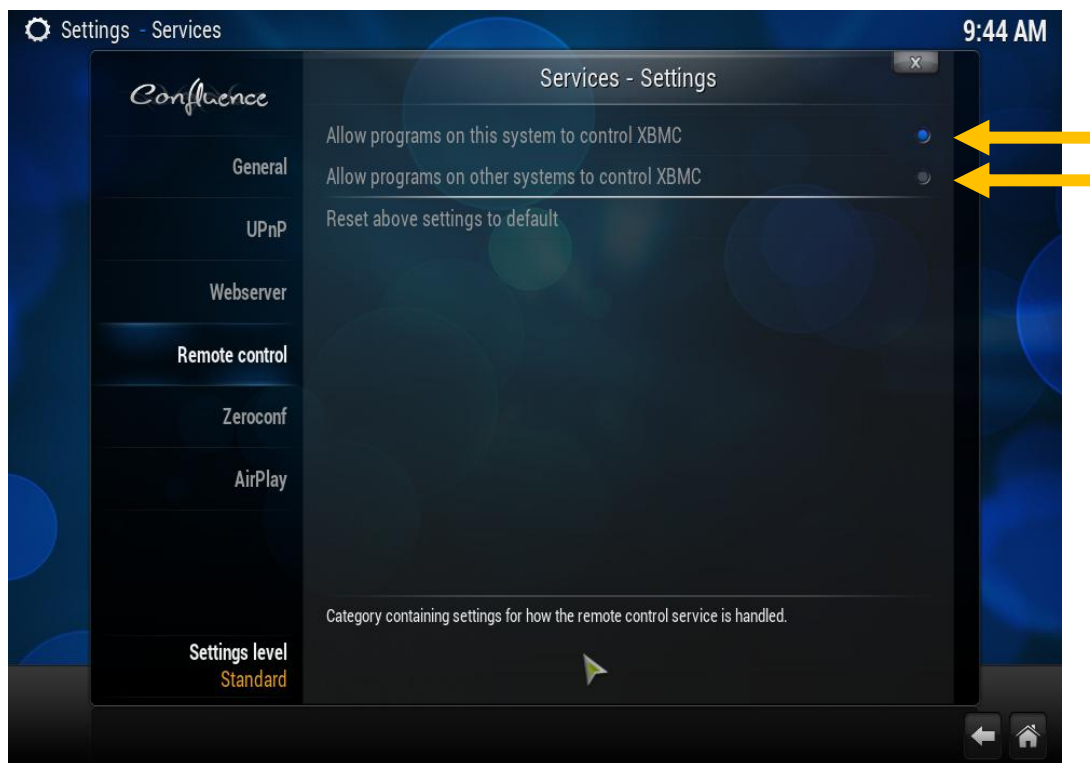
XBMC / Kodi can be easily controlled via JSON TCP interface. With this interface you can use almost any remote control feature of XBMC.

Activate JSON TCP in XBMC: Settings → Services → Remote control →
“Allow programs on this system to control XBMC”

On some system you have also to check:
“Allow programs on other systems to control XBMC”
This depends on your network configuration

Restart XBMC.

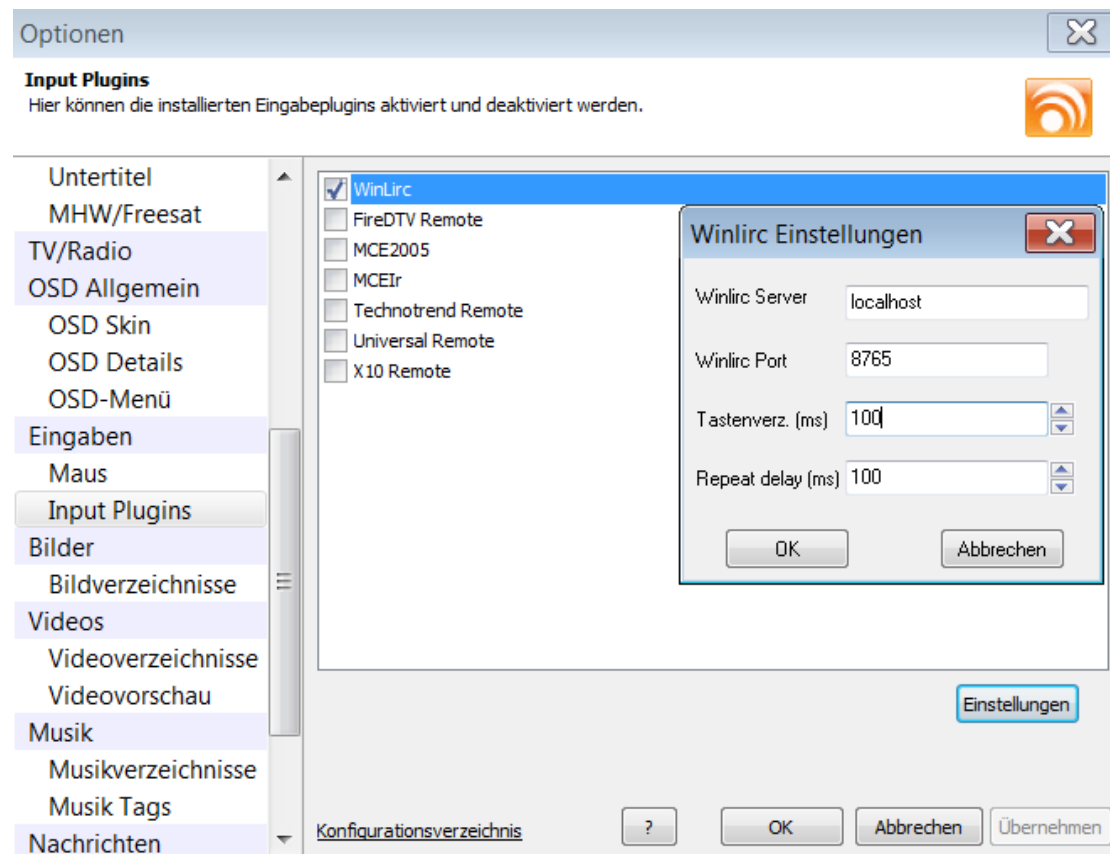
Check also Firewall settings for YARD2 software and XBMC / Kodi !



3.3 DVBCViewer

For DVBCViewer use the WinLirc Plugin provided with DVBCViewer

1. Enable Plugin: Settings → Input → Input Plugins → Winlirc
2. Set “Repeat delay” and “Tastenverz.” to 100 since this is already done in YARD2 Software (or lower if you setup less than 100 in YARD software)
3. Configure events in Settings → Input → Learn mode



3.4 MediaPortal

You can control MediaPortal in 2 ways:

1. You can use the WinLirc Plugin in this folder and put it into
[MP]\plugins\process
Configure it with MediaPortal Configuration Tool → Plugins
Recommended!
2. You can use IR Server Suite:
<http://forum.team-mediaportal.com/threads/ir-server-suite-aka-irss-releases.75092/>
Be sure that Y.A.R.D. SW is started before ISS !
Do not use to start "Winlirc.exe" or "YARD.exe" "

For automatic wakeup time programming use mySQL.

If you have login problems from YARD2 Software, add a new user in MySQL and setup it in VDR tab in YARD2 Software.

MySQL commands (MySQL server command line client):

```
CREATE USER 'yard'@'%' IDENTIFIED BY 'yard';  
GRANT ALL ON *.* TO 'yard'@'%';
```

3.5 Eventghost

Use the WinLirc interface of Eventghost for communication.

3.6 LCDHype

Install LCDhype (076) and copy folder “Controller” which contains the driver “YARDhype” from the software package folder “LCDhype” to the installation folder of LCDhype.

Optional:

For a faster startup of LCDhype, remove all other controller driver from “Controller” except “YARDhype” and “Preview”.

Also copy the “Plugins” folder to the installation folder of LCDhype .

You find information and some examples how to use the plugins inside the plugin folder.

If you use a KS0108 LCD update the LCDhype.exe with the “lcdhype_0761_install_0760_before.zip”.

4 Communications with Y.A.R.D.2 Software

4.1 External command line Wake up “SetWakeup.exe”

SetWakeup.exe is made for external scheduler. It has the same parameters as CmosTimer (Common RTC wake up program).

You can rename this program if needed. (e.g. for PVRScheduler)

Usage:

Setwakeup /offonly (Disable Timer)

Setwakeup /wakeup=Long date time format e.g. 31.12.2005 10:45:30

Setwakeup /wakeupononly=Long date time format e.g. 31.12.2005 10:45:30

Setwakeup yyyy mm dd hh mm - e.g. 2010 10 20 22 50

Examples:

Setwakeup /wakeup=31.12.2005 10:45:30

Setwakeup /wakeupononly=31.12.2005 10:45:30

Setwakeup 2010 10 20 22 50

4.2 External Wake up YARDdll.dll

You can use YARDdll.dll to set wakeup time with your program.

Exported function:

YARD_SET_TIME(NewWU: TSystemTime)

4.3 External LCD program for Y.A.R.D.2 LCD

At the moment only LCDhype fully supports Y.A.R.D.2 to show your info on LCD.

Use **LCDhype** driver (YARDhype) included in Y.A.R.D.2 software package and copy it to “[LCDhype]\controller” folder.

An **LCDSmartie** driver is available, but only for character LCDs.

If you want to develop a driver for a LCD program, please contact me.

4.4 WinLirc IR-Events:

Y.A.R.D.2 uses WinLirc protocol for distributing IR-Events.

If you want to use the IR-Events, create a socket and connect to the configured IP (e.g. localhost) & Port (8765)

WinLirc format (each frame ends with Hex10 (0x10, \$10)):

[16Byte IR Code][blank][Repeat 00.FF][blank][Name][blank][YARD2USB] **[HEX10]**

➔ 0011223344556677 00 IR_Button1 YARD2USB**[HEX10]**

If [Name] is not defined the 16Byte IR Code is repeated

➔ 0011223344556677 00 0011223344556677 YARD2USB**[HEX10]**

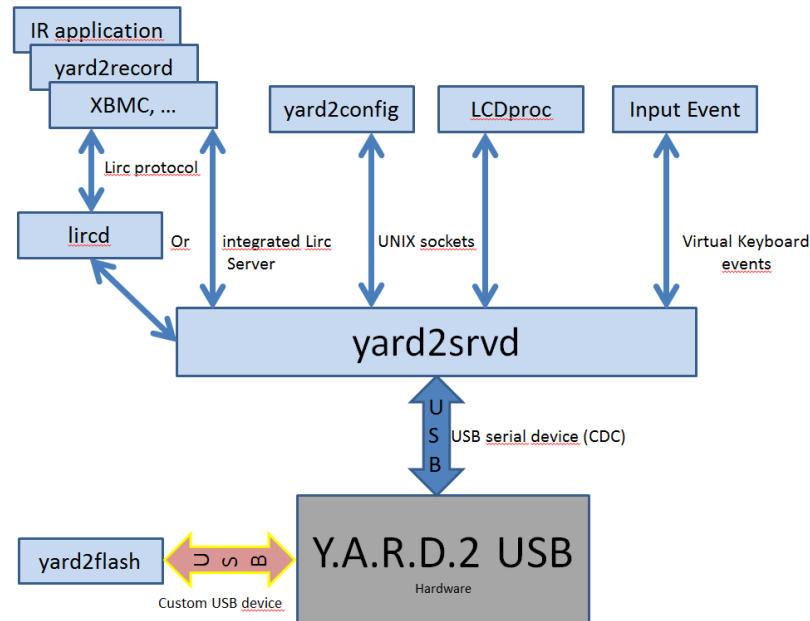
Y.A.R.D. 2 USB Linux Software description

Linux Software is open source and under GPL licence!

Source: <https://www.assembla.com/code/yard2srvd/git/nodes>

Package: <https://launchpad.net/~yard2team/+archive/stable>

Y.A.R.D.2 software structure:



The Y.A.R.D.2 daemon **yard2srvd** is used to communicate with other applications and Y.A.R.D.2 hardware.

The default daemon mode via **yard2tools.cfg** is Input mode, which simulates a keyboard. With this virtual keyboard, normally all applications can operate if they accept keyboard commands.

For IR lirc applications, a **lircd** daemon patch is available, or an integrated lirc-compatible server implementation inside the **yard2srvd** daemon can be used.

Y.A.R.D.2 itself has no LCD program implemented. You need an external program like **LCDproc**, which sends the data via **yard2srvd** to the connected LCD.

Important:

An **udev** rule is provided to start the daemon automatically:

```
/usr/bin/yard2srvd -d -c /etc/yard2/yard2tools.cfg
```

If you do not use **udev** for startup of **yard2srvd**, the startup script depends on your Linux distribution; you have to modify your **init** script to start **yard2srvd**.

For testing, you can start **yard2srvd** with a detailed log:

```
sudo ./yard2srvd -l 5
```

sudo is necessary for the first time to create a **lircd**-compatible socket in **/var/run/lirc/lircd** and the input event if you use the integrated lirc server or input events.

Installation of yard2tools (2 possible ways):

1. PPA – package (Recommended for normal user):

Installation from launchpad as debian package:

-
1. Add Y.A.R.D.2 ppa to your system ppa
 `sudo add-apt-repository ppa:yard2team/stable`
 2. Update database:
 `sudo apt-get update`
 3. Install yard2tools
 `sudo apt-get install yard2tools`
 4. Reboot

If you can not add repository, you can download the yard2tools package manually:
<https://launchpad.net/~yard2team/>

2. Source from git:

-
1. get Y.A.R.D 2 linux software from
 `git clone git://git.assembla.com/yard2srvd.git yard2`
 2. See also README for installation
 You need libusb-dev nad libbsd-dev to compile yard2. If not installed →
 `sudo apt-get install libusb-dev`
 `sudo apt-get install libbsd-dev`
 3. Run `./configure`
 4. Run `make`
 5. Run `make install` if you want to copy the files to `/usr/local/..`
 6. Add your user to group "dialout" (needed to open the serial port without sudo)
 `usermod -a -G dialout username`
 7. Use `-daemon` as argument to run as real daemon (Startup, done by udev rule)

After installation use yard2record to create IR code event mapping!

See also → 4. yard2record

1. yard2srvd Y.A.R.D 2 Linux daemon

yard2srvd is the main daemon which communicates with the Y.A.R.D.2 hardware. All communication will be done via this daemon.

Therefore other programs can send commands via Unix sockets to the daemon.

Available I/O sockets:

- /tmp/configserver: Used only for yard2config program!!!!
- /tmp/lcdserver: Used to communicate with LCD programs like lcdproc
- /tmp/yardsrv_sock: Used for the lircd communication
- /var/run/lirc/lircd: Used for integrated lirc server; using the same socket name as lirc. External programs can connect to this socket to get IR events (same as lirc).

Commandline options:

- d, --daemon: Start in daemon mode.
- c <file> : Config file normally “/etc/yard2/yardtools.cfg”
- D <device>, --device=<device>:
The tty device for yard2. Default: /dev/ttyYARD2
or /dev/ttyACM0, checked in this order.
- I, --input: Use the Linux input system to deliver the key codes.
- i <file>, --irmap=<file>: The IR map filename (with path).
- L, --lirc: Use lircd server with yard2 patch.
- O, --ownlirc: Use own lirc implementation.
- 1, --rdelay1: Set repeat delay 1 in ms. Default 250, accepted values 50..1000
- 2, --rdelay2: Set repeat delay 2 in ms. Default 100, accepted values 50..1000
- l <val>, --loglevel=<val>:
Loglevel: 1:error, 2:warning, 3:info, 4:verbose, 5:debug
- s, --syslog: Use syslog for logging.
- h, --help: Help text.

Info: Options -I, -L and -O are mutual exclusive.

The default udev rule use these parameters:

Yard2srvd -d -c /etc/yard2/yardtools.cfg

Change it if you want to change the udev rule, it is located in:
/lib/udev/rules.d/60-usb-yard2.rules

Normally change the option in the config file: /etc/yard2/yardtools.cfg

Hint:

To see the output of yard2srvd if you use -s option use
“sudo tail -f /var/log/syslog”

2. yard2config:

This is the main configuration program for the Y.A.R.D.2 hardware.
yard2srvd must be started before.

You can configure the main settings of the Y.A.R.D.2 hardware.

The setting description can be found at the Windows description.

LCD can be configured, but currently only a beta of LCDproc implementation for character LCDs is available.

3. yard2wakeup:

yard2wakeup: [-C | -I | -S] [2] [3]

Commandline options:

- C: Read current wake up from Y.A.R.D.2
- I: New wake up time in time_t
- S: New wake up time as string (dd.mm.yyyy MM:HH)
- [2]: reduction time in minutes
- [3]: -Poff: Shutdown system (need sudo)

Example:

```
yard2wakeup -S "20.12.2012 20:10" 10 = program 20.12.2012 20:00  
yard2wakeup -I 1046958562
```

It can also called directly with VDR -s option.

Y.A.R.D will be programmed with the new time (or wakeup disabled)
In this case the system will be shutdown if the time is in the future.

For VDR an automatic wakeup script is available.

This will program the next wakeup time automatically if you shutdown the system via VDR.

Wakeup script is located in:

/share/vdr/shutdown-hooks/S90.yard2-wakeup

VDR/yaVDR: Disable other shutdown scripts in WEB front end by setting to "None"

easyVDR: Disable all other wakeup methodes in "Settings"

Important:

**Enable Y.A.R.D.2 wake up by setting YARD2_ENABLED="yes" in the file
/etc/vdr/vdr-addon-yard2wakeup.conf**

4. yard2record:

yard2record: [-i]

-i <file>: Optional: the IR map filename (with path).

If not specified (recommended) default filename is used

If you use a different filename, change it also in /etc/yard2/yard2tools.cfg

You have to create an IR map file with “Input mode” or “Own lirc Server” mode!

With this program you can create a remote control mapping config for the lirc server implementation and Input(x) in yard2srvd.

After changing the key-ID map, you have to reboot to activate the changes!

The default configuration file path is: home/[user]/yardimap.txt"

yard2tools.cfg use this file from path: /etc/yard2

Copy the file to this location “sudo cp /home/[user]/yardimap.txt /etc/yard2/”

or use “sudo yard2record -i /etc/yard2/yardimap.txt”

File Format: ACSII

[IR CODE 16char]@[BUTTON NAME]@[Event ID]@

Example:

0701020304000000@KEY_LEFT@106@

Diffrent modes for yard2record are available (easiest way is 3):

1: Enter Button Name and Event ID on your own

2: Enter Button Name → Event ID will be selected automatically

3: Enter Event ID → Button name will be selected automatically

For yaVDR, easyVDR and XBMC a Key table is shown for an easier handling.

Look at the keyboard / IR maping in yaVDR and easyVDR:

See also Appendix 4 for all available Linux KEY-IDS

yaVDR: <http://www.yavdr.org/documentation/0.5/de/ch02s03.html>

easyVDR: <http://wiki.easy-vdr.de/index.php?title=Bedienung>

Common VDR / XBMC KEY-IDs

KEY_UP:	103	KEY_RED:	398	KEY_IMAGES:	442
KEY_DOWN:	108	KEY_GREEN:	399	KEY_CHANNELUP:	402
KEY_LEFT:	105	KEY_YELLOW:	400	KEY_CHANNELDOWN:	403
KEY_RIGHT:	106	KEY_BLUE:	401	KEY_CHANNEL:	336
KEY_OK:	352	KEY_PLAY:	207	KEY_VOLUMEUP:	115
KEY_ENTER:	28	KEY_PAUSE:	119	KEY_VOLUMEDOWN:	114
KEY_MENU:	139	KEY_STOP:	128	KEY_MUTE:	113
KEY_ESC:	1	KEY_RECORD:	167	KEY_FAVORITES:	365
KEY_SPACE:	57	KEY_SETUP:	141	KEY_SUBTITLE:	370
KEY_BACKSPACE:	14	KEY_TIME:	359	KEY_1:	2
KEY_FASTFORWARD:	208	KEY_MODE:	373	KEY_2:	3
KEY_REWIND:	168	KEY_SCREEN:	375	KEY_3:	4
KEY_PREVIOUS:	412	KEY_PROG1:	148	KEY_4:	5
KEY_NEXT:	407	KEY_PROG2:	149	KEY_5:	6
KEY_BACK:	158	KEY_PROG3:	202	KEY_6:	7
KEY_POWER:	116	KEY_PROG4:	203	KEY_7:	8
KEY_EPG:	365	KEY_PVR:	366	KEY_8:	9
KEY_FN:	464	KEY_AUDIO:	392	KEY_9:	10
KEY_TEXT:	388	KEY_VIDEO:	393	KEY_0:	11

Hint: Some distributions use KEY_OK instead of KEY_ENTER.

Try both if “Enter” is not working

5. yard2flash:

With this program you can update the Y.A.R.D.2 Firmware.

1. Start yard2config and select “U” to enter update mode
Note: yard2config will close itself after this command!!
2. Run: `sudo yard2flash --program [filename]`
3. Programming takes some time
4. Reset is done automatically (in case of a problem run: `sudo yard2flash --reset`)
5. Wait about 20 seconds for reassigning USB device
6. If you use udev rule, yard2srvd will be shutdown and restart automatically.
Otherwise yard2srvd daemon waits 5 minutes after entering Update mode and tries to reconnect. If you need longer than 5 minutes you have restart yard2srvd.

6. lirctest:

To test the lirc IR events you can use lirctest.

This will connect to the lirc socket and print out the lirc string if remote control button is pressed. You can use this with lircd and the yard2srvd integrated lirc server implementation.

7. yard2lcdtest:

For Y.A.R.D.2 LCD version a small LCD test utility is provided.
Start yard2lcdtest and enter commands:

C: Clear LCD

G[line]: Goto line x start with 0 (G0 = set cursor to line 0)

W[Text]: Write text to LCD (e.g. WHalloWorld)

Only supports are Linux distributions with full compiler support, e.g. Openelec is not supported !

8. Event/Input server (default for udev & yard2tools.cfg):

yard2srvd can simulate a keyboard event through the Linux event handler.

This is the default mode in yard2tools.cfg.

To activate it, use “-I” commandline option

Hint:

The remote control config file is not compatible with the lirc.conf file.

To create a new one use “yard2record” (see above)

The keyboard ID of the events can be found in the _input_h_KeybIDs.txt.

9. Integrated lirc server implementation:

yard2srvd has a basic lirc compatible server (beta) implemented (without IRSEND!).

To activate it, use “-O” commandline option

Important:

Do not start original lircd! It is not necessary if you are using the integrated lirc server in yard2srvd.

Hint:

The remote control config file is not compatible with the lirc.conf file.

To create a new one use “yard2record” (see above)

10. Use original lircd

Y.A.R.D.2 is now official part of lircd distribution.
Just select yard2 for installation.
See lircd documentation for installation.

Old version 0.9.1b:

1. Get lirc 0.9.1b from sourceforge:
`git clone -b release_0.9.1b --single-branch git://git.code.sf.net/p/lirc/git lirc_091b`
2. Change to folder lirc_091b and apply patch to Lirc 0.9.1b
(included in yard2srvd directory yard2_lircd_091b_patch.txt)
`patch -p1 < yard2_lircd_091b_patch.txt`
3. lirc need some additional tools to compile. If not installed → `sudo apt-get install`
 - libtool-1.3.3
 - automake-1.4
 - autoconf-2.13 (min. Version)
 - man2html
4. Copy additional files (included in yard2srvd directory):
copy \daemons and \remotes to lirc root directory "[lirc]\"
5. run lirc autogen
`./autogen.sh`
6. run lirc configure
`./configure --with-driver=yard2`
7. run
`make`
8. run
`make install`
9. Start LIRC
`sudo daemons/lircd -n -H yard2`

11. Usage of LCDproc:

Documentation of LCDproc <http://lcdproc.sourceforge.net/docs/current-user.html>)

LCDporc can only be used with Linux distributions with full compiler support,
e.g. Openelec is not supported !

1. Get LCDproc from sourceforge (0.5.7):

<http://sourceforge.net/projects/lcdproc/files/lcdproc/0.5.7/>

or use CVS

```
cvs -d:pserver:anonymous@lcdproc.cvs.sourceforge.net:/cvsroot/lcdproc login
```

[Hit Enter when prompt for password]

```
cvs -d:pserver:anonymous@lcdproc.cvs.sourceforge.net:/cvsroot/lcdproc checkout -r lcdproc-0-5-7 lcdproc
```

2. apply patch to LCDproc (included in yard2srvd LCDproc directory)

```
patch -p0 < yard2patch.txt
```

3. Copy additional files (included in yard2srvd/LCDproc dirctory) to LCDproc

4. run: sh autogen.sh

6. run: ./configure --prefix=/usr/local --enable-drivers=yard2LCD

7. run: make

8. run: make install (optional)

9. Change settings and resolution of your LCD in LCDd.conf:

```
[yard2LCD]
```

```
Size=16x2
```

10. Start LCDd

```
sudo ./server/LCDd -f (-f run in foreground for testing)
```

12. Openelec installation (i386 32/64Bit / ARM6 32Bit)

- SSH login required.

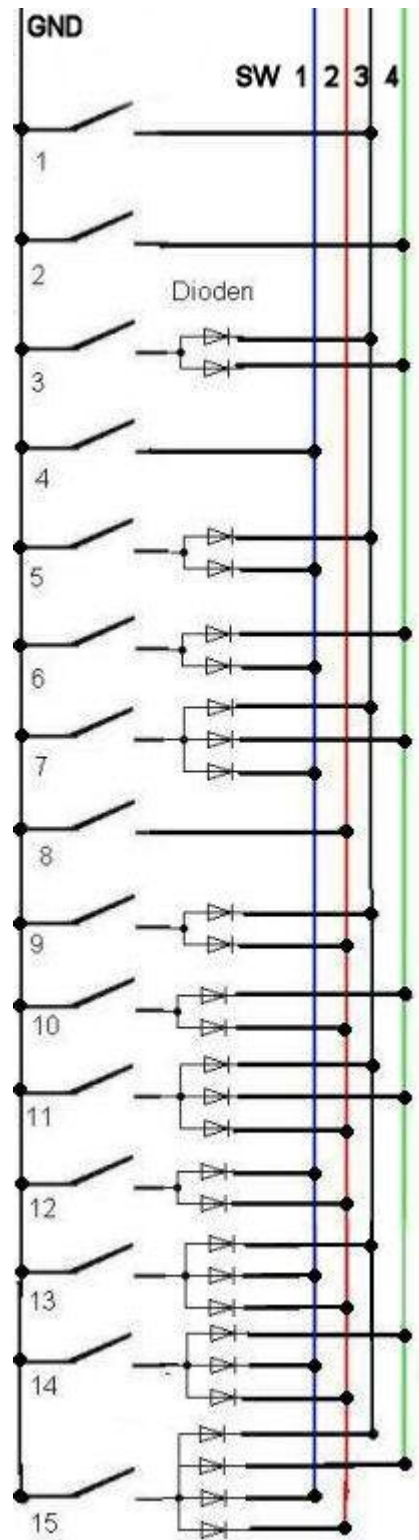
1. Get Openelec binaries from the YARD2 Software package
2. Copy OE binaries (x86/ARM6) to e.g. \\openelec\downloads\yard2
3. Connect to OE with a SSH client (e.g. putty) (Enable SSH if disabled)
4. Create an folder /storage/yard2
`mkdir /storage/yard2`
5. Copy all files to this folder and make them executable (`chmod +x *`)
`cd /storage/downloads/yard2`
`cp * /storage/yard2`
`cd /storage/yard2`
`chmod +x *`
6. Copy autorun.sh to “/storage/.config”
`cp autorun.sh /storage/.config`
7. All configuration files must be in “/storage/yard2”
Change you settings in /storage/yard2/yard2tools.cfg if necessary
8. Restart system and run `yard2record -i /storage/yard2/yardirmap.txt`
See installation instruction above for yard2record and other programs.
9. Restart system after yard2record to activate changes

Note:

- yard2flash (Firmware update) is not supported on Openelec!
- LCD is not supported

Appendix 1

1. Example for a diode matrix for JSW to provide up to 15 switches.



Appendix 2 – +5VSB (Standby)

Y.A.R.D.2 needs +5VSB (5V Stand by) voltage from the system.
This is provided normally from the USB port.

On some mainboards you have to enable this via mainboard Jumper or Bios settings.
Please look into your mainboard / system manual if 5VSB is not provided via USB or how to enable it.

Known mainboard settings:

Asus	P8Q77	Enable in Bios: “legacy USB” and Wakeup via Keyboard
	P8H77	Enable in Bios: “legacy USB” and Wakeup via Keyboard
	H97M-E	Enable in Bios: “Charging USB devices in Power State S5” Warning: This will not power the YARD2 after a power loss! ➔ Enable also “Restore Power loss” ➔ “Power on”

Currently only a very few MB was not able to provide 5VSB from USB.
Normally this is working with newer mainboards without problems.

Appendix 3 – FAQ

1. **I attach Y.A.R.D.2 to the USB bus, a device is recognized but no COM port (Windows) or ttyACM (Linux) device is installed.**

Solution:

Probably the Y.A.R.D.2 is in Bootloader mode.

- Windows: Check device manager if a custom Microchip device is installed
- Linux: run lsusb and check if a device with
idVendor=04d8, idProduct=ff0b or f544 is installed
- Check if you set the force Update jumper, if set remove it
- Cancel FW update via Software
(Windows: Cancel update; Linux yard2flash --reset)
- Check for a solder bridge around the force firmware update jumper

2. **I installed everything, Software is running, but I cannot receive any IR signal**

Solution:

1. Probably you installed the IR Receiver in the wrong direction
TSOP 31238: The round side of the IR Receiver must be directed on the outside of the Y.A.R.D.2
2. **TSOP 32238:** The round side of the IR Receiver must be directed on the inside of the Y.A.R.D.2
3. You use a not supported IR protocol
Try any other remote control you have at home or use a Logitech Harmony with “Asrock – 330HT” profile

Appendix 4 – Linux input.h KEY-Ids

KEY_RESERVED	0	KEY_KP9	73	KEY_DELETEFILE	146
KEY_ESC	1	KEY_KPMINUS	74	KEY_XFER	147
KEY_1	2	KEY_KP4	75	KEY_PROG1	148
KEY_2	3	KEY_KP5	76	KEY_PROG2	149
KEY_3	4	KEY_KP6	77	KEY_WWW	150
KEY_4	5	KEY_KPPLUS	78	KEY_MSDOS	151
KEY_5	6	KEY_KP1	79	KEY_COFFEE	152
KEY_6	7	KEY_KP2	80	KEY_SCREENLOCK	152
KEY_7	8	KEY_KP3	81	KEY_DIRECTION	153
KEY_8	9	KEY_KP0	82	KEY_CYCLEWINDOWS	154
KEY_9	10	KEY_KPDOT	83	KEY_MAIL	155
KEY_0	11	KEY_ZENKAKUHANKAKU	85	KEY_BOOKMARKS	156
KEY_MINUS	12	KEY_102ND	86	KEY_COMPUTER	157
KEY_EQUAL	13	KEY_F11	87	KEY_BACK	158
KEY_BACKSPACE	14	KEY_F12	88	KEY_FORWARD	159
KEY_TAB	15	KEY_RO	89	KEY_CLOSECD	160
KEY_Q	16	KEY_KATAKANA	90	KEY_EJECTCD	161
KEY_W	17	KEY_HIRAGANA	91	KEY_EJECTCLOSECD	162
KEY_E	18	KEY_HENKAN	92	KEY_NEXTSONG	163
KEY_R	19	KEY_KATAKANAHIRAGANA	93	KEY_PLAYPAUSE	164
KEY_T	20	KEY_MUHENKAN	94	KEY_PREVIOUSSONG	165
KEY_Y	21	KEY_KPJPCOMMA	95	KEY_STOPCD	166
KEY_U	22	KEY_KPENTER	96	KEY_RECORD	167
KEY_I	23	KEY_RIGHTCTRL	97	KEY_REWIND	168
KEY_O	24	KEY_KPSLASH	98	KEY_PHONE	169
KEY_P	25	KEY_SYSRQ	99	KEY_ISO	170
KEY_LEFTBRACE	26	KEY_RIGHTALT	100	KEY_CONFIG	171
KEY_RIGHTBRACE	27	KEY_LINEFEED	101	KEY_HOMEPAGE	172
KEY_ENTER	28	KEY_HOME	102	KEY_REFRESH	173
KEY_LEFTCTRL	29	KEY_UP	103	KEY_EXIT	174
KEY_A	30	KEY_PAGEUP	104	KEY_MOVE	175
KEY_S	31	KEY_LEFT	105	KEY_EDIT	176
KEY_D	32	KEY_RIGHT	106	KEY_SCROLLUP	177
KEY_F	33	KEY_END	107	KEY_SCROLLDOWN	178
KEY_G	34	KEY_DOWN	108	KEY_KPLEFTPAREN	179
KEY_H	35	KEY_PAGEDOWN	109	KEY_KPRIGHTPAREN	180
KEY_J	36	KEY_INSERT	110	KEY_NEW	181
KEY_K	37	KEY_DELETE	111	KEY_REDO	182
KEY_L	38	KEY_MACRO	112	KEY_F13	183
KEY_SEMICOLON	39	KEY_MUTE	113	KEY_F14	184
KEY_APOSTROPHE	40	KEY_VOLUMEDOWN	114	KEY_F15	185
KEY_GRAVE	41	KEY_VOLUMEUP	115	KEY_F16	186
KEY_LEFTSHIFT	42	KEY_POWER	116	KEY_F17	187
KEY_BACKSLASH	43	KEY_KPEQUAL	117	KEY_F18	188
KEY_Z	44	KEY_KPPLUSMINUS	118	KEY_F19	189
KEY_X	45	KEY_PAUSE	119	KEY_F20	190
KEY_C	46	KEY_SCALE	120	KEY_F21	191
KEY_V	47	KEY_KPCOMMA	121	KEY_F22	192
KEY_B	48	KEY_HANGEUL	122	KEY_F23	193
KEY_N	49	KEY_HANGUEL	122	KEY_F24	194
KEY_M	50	KEY_HANJA	123	KEY_PLAYCD	200
KEY_COMMA	51	KEY_YEN	124	KEY_PAUSECD	201
KEY_DOT	52	KEY_LEFTMETA	125	KEY_PROG3	202
KEY_SLASH	53	KEY_RIGHTMETA	126	KEY_PROG4	203
KEY_RIGHTSHIFT	54	KEY_COMPOSE	127	KEY_DASHBOARD	204
KEY_KPASTERISK	55	KEY_STOP	128	KEY_SUSPEND	205
KEY_LEFTALT	56	KEY_AGAIN	129	KEY_CLOSE	206
KEY_SPACE	57	KEY_PROPS	130	KEY_PLAY	207
KEY_CAPSLOCK	58	KEY_UNDO	131	KEY_FASTFORWARD	208
KEY_F1	59	KEY_FRONT	132	KEY_BASSBOOST	209
KEY_F2	60	KEY_COPY	133	KEY_PRINT	210
KEY_F3	61	KEY_OPEN	134	KEY_HP	211
KEY_F4	62	KEY_PASTE	135	KEY_CAMERA	212
KEY_F5	63	KEY_FIND	136	KEY_SOUND	213
KEY_F6	64	KEY_CUT	137	KEY_QUESTION	214
KEY_F7	65	KEY_HELP	138	KEY_EMAIL	215
KEY_F8	66	KEY_MENU	139	KEY_CHAT	216
KEY_F9	67	KEY_CALC	140	KEY_SEARCH	217
KEY_F10	68	KEY_SETUP	141	KEY_CONNECT	218
KEY_NUMLOCK	69	KEY_SLEEP	142	KEY_FINANCE	219
KEY_SCROLLLOCK	70	KEY_WAKEUP	143	KEY_SPORT	220
KEY_KP7	71	KEY_FILE	144	KEY_SHOP	221
KEY_KP8	72	KEY_SENDFILE	145	KEY_ALTERASE	222

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KEY_CANCEL	223	KEY_RADIO	385	KEY_DEL_EOS	449
KEY_BRIGHTNESSDOWN	224	KEY_TUNER	386	KEY_INS_LINE	450
KEY_BRIGHTNESSUP	225	KEY_PLAYER	387	KEY_DEL_LINE	451
KEY_MEDIA	226	KEY_TEXT	388	KEY_FN	464
KEY_SWITCHVIDEOMODE	227	KEY_DVD	389	KEY_FN_ESC	465
KEY_KBDILLUMTOGGLE	228	KEY_AUX	390	KEY_FN_F1	466
KEY_KBDILLUMDOWN	229	KEY_MP3	391	KEY_FN_F2	467
KEY_KBDILLUMUP	230	KEY_AUDIO	392	KEY_FN_F3	468
KEY_SEND	231	KEY_VIDEO	393	KEY_FN_F4	469
KEY_REPLY	232	KEY_DIRECTORY	394	KEY_FN_F5	470
KEY_FORWARDMAIL	233	KEY_LIST	395	KEY_FN_F6	471
KEY_SAVE	234	KEY_MEMO	396	KEY_FN_F7	472
KEY_DOCUMENTS	235	KEY_CALENDAR	397	KEY_FN_F8	473
KEY_BATTERY	236	KEY_RED	398	KEY_FN_F9	474
KEY_BLUETOOTH	237	KEY_GREEN	399	KEY_FN_F10	475
KEY_WLAN	238	KEY_YELLOW	400	KEY_FN_F11	476
KEY_UWB	239	KEY_BLUE	401	KEY_FN_F12	477
KEY_UNKNOWN	240	KEY_CHANNELUP	402	KEY_FN_1	478
KEY_VIDEO_NEXT	241	KEY_CHANNELDOWN	403	KEY_FN_2	479
KEY_VIDEO_PREV	242	KEY_FIRST	404	KEY_FN_D	480
KEY_BRIGHTNESS_CYCLE	243	KEY_LAST	405	KEY_FN_E	481
KEY_BRIGHTNESS_ZERO	244	KEY_AB	406	KEY_FN_F	482
KEY_DISPLAY_OFF	245	KEY_NEXT	407	KEY_FN_S	483
KEY_WIMAX	246	KEY_RESTART	408	KEY_FN_B	484
KEY_RFKILL	247	KEY_SLOW	409	KEY_BRL_DOT1	497
KEY_MICMUTE	248	KEY_SHUFFLE	410	KEY_BRL_DOT2	498
KEY_OK	352	KEY_BREAK	411	KEY_BRL_DOT3	499
KEY_SELECT	353	KEY_PREVIOUS	412	KEY_BRL_DOT4	500
KEY_GOTO	354	KEY_DIGITS	413	KEY_BRL_DOT5	501
KEY_CLEAR	355	KEY_TEEN	414	KEY_BRL_DOT6	502
KEY_POWER2	356	KEY_TWEN	415	KEY_BRL_DOT7	503
KEY_OPTION	357	KEY_VIDEOPHONE	416	KEY_BRL_DOT8	504
KEY_INFO	358	KEY_GAMES	417	KEY_BRL_DOT9	505
KEY_TIME	359	KEY_ZOOMIN	418	KEY_BRL_DOT10	506
KEY_VENDOR	360	KEY_ZOOMOUT	419	KEY_NUMERIC_0	512
KEY_ARCHIVE	361	KEY_ZOOMRESET	420	KEY_NUMERIC_1	513
KEY_PROGRAM	362	KEY_WORDPROCESSOR	421	KEY_NUMERIC_2	514
KEY_CHANNEL	363	KEY_EDITOR	422	KEY_NUMERIC_3	515
KEY_FAVORITES	364	KEY_SPREADSHEET	423	KEY_NUMERIC_4	516
KEY_EPG	365	KEY_GRAPHICSEDITOR	424	KEY_NUMERIC_5	517
KEY_PVR	366	KEY_PRESENTATION	425	KEY_NUMERIC_6	518
KEY_MHP	367	KEY_DATABASE	426	KEY_NUMERIC_7	519
KEY_LANGUAGE	368	KEY_NEWS	427	KEY_NUMERIC_8	520
KEY_TITLE	369	KEY_VOICEMAIL	428	KEY_NUMERIC_9	521
KEY_SUBTITLE	370	KEY_ADDRESSBOOK	429	KEY_NUMERIC_STAR	522
KEY_ANGLE	371	KEY_MESSENGER	430	KEY_NUMERIC_POUND	523
KEY_ZOOM	372	KEY_DISPLAYTOGGLE	431	KEY_CAMERA_FOCUS	528
KEY_MODE	373	KEY_SPELLCHECK	432	KEY_WPS_BUTTON	529
KEY_KEYBOARD	374	KEY_LOGOFF	433	KEY_TOUCHPAD_TOGGLE	530
KEY_SCREEN	375	KEY_DOLLAR	434	KEY_TOUCHPAD_ON	531
KEY_PC	376	KEY_EURO	435	KEY_TOUCHPAD_OFF	532
KEY_TV	377	KEY_FRAMEBACK	436	KEY_CAMERA_ZOOMIN	533
KEY_TV2	378	KEY_FRAMEFORWARD	437	KEY_CAMERA_ZOOMOUT	534
KEY_VCR	379	KEY_CONTEXT_MENU	438	KEY_CAMERA_UP	535
KEY_VCR2	380	KEY_MEDIA_REPEAT	439	KEY_CAMERA_DOWN	536
KEY_SAT	381	KEY_10CHANNELSUP	440	KEY_CAMERA_LEFT	537
KEY_SAT2	382	KEY_10CHANNELSDOWN	441	KEY_CAMERA_RIGHT	538
KEY_CD	383	KEY_IMAGES	442		
KEY_TAPE	384	KEY_DEL_EOL	448		